

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Evaluating the implementation of the Mayo-Portland adaptability inventory-4 (MPAI-4) in three rehabilitation settings in Quebec: A mixed-methods study protocol
<b>AUTHORS</b>	KENGNE TALLA, Pascaline; Thomas, Aliki; Ataman, Rebecca; Auger, Claudine; McKerral, Michelle; Wittich, Walter; Poncet, Frédérique; Ahmed, Sara

### VERSION 1 – REVIEW

<b>REVIEWER</b>	Cogan, Alison University of Southern California, Chan Division of Occupational Science and Occupational Therapy
<b>REVIEW RETURNED</b>	21-Oct-2022

<b>GENERAL COMMENTS</b>	<p>This study reports the protocol for an implementation study of the introduction of the MPAI-4 into three outpatient stroke clinics in Quebec. The study protocol is comprehensive and well aligned with the objectives. The following comments are mostly requests for clarification of certain aspects of the methods.</p> <p>Page 6 line 18: missing a word (The use of mixed-methods within...)</p> <p>Page 6 line 50: awkward wording or possibly just the wrong word: ...with good psychometric properties as the responsiveness.... ("as" seems like the problematic word here)</p> <p>Page 7: Statement about patient and public involvement is a bit unclear. Does this statement mean that patients/the public were not involved in the study design only? Clearly, patients will be involved in the implementation process (at least indirectly) as they are assessed using the MPAI-4.</p> <p>Page 7: Could the authors clarify the process of identifying implementation strategies? Is the first phase to identify barriers and enablers to implementation with clinicians and managers, and then map those barriers and enablers to CFIR and ERIC to identify strategies? Or will suggestions for strategies be solicited from clinical teams first? Are both steps part of pre-implementation? Note: As I read further down, it appears this paragraph was intended to serve as an introduction to the overall description of the pre-implementation and implementation phases of the study (starting with the heading "Implementation process". Initially, it seemed as though this paragraph was the beginning of the detailed methods because of the information about engaging clinical teams and selecting strategies.</p> <p>Page 12 line 27: Are IT professionals included because they need to make changes to an electronic health record system to support the implementation?</p> <p>Page 12 line 30: Could you clarify whether all rehabilitation professionals will be administering the MPAI-4 once implemented?</p> <p>Page 12 line 48: "Objective 1" is not labeled as such anywhere else</p>
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	<p>in the paper.</p> <p>Page 13, survey paragraph: This paragraph is confusing. Will you use the 2 assessments listed, or are you adapting them in some way (described as “questions related to two measurement tools”). Also, the beginning of the paragraph says it is a 15-minute survey and then the last sentence says 20 minutes. Please clarify.</p> <p>It may be easier to describe the assessment tools first and then discuss when they will be administered.</p> <p>Page 13, line 39+: The first sentence about ORIC is quite long. Consider splitting it into two sentences.</p> <p>Can you clarify which language version(s) of ORIC you will be using?</p> <p>Page 20, first sentence: Can you clarify what data will be collected by “screening of MPAI-4 data from patient charts” and the three online surveys? Are you planning to extract the actual patient MPAI-4 responses or some kind of meta-data about the administration? How is data from the patient chart similar or different from the three online surveys?</p> <p>Page 20, line 21: What construct does Part C of the NoMAD assess?</p> <p>Page 22, line 30+: can you say a bit more about how response bias is a limitation? As currently written, it sounds like the mixed-method approach will introduce this bias, but then triangulation of sources is described as part of the remedy.</p>
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<b>REVIEWER</b>	Perumparaichallai , Ramaswamy Kavitha AZ BrainCare
<b>REVIEW RETURNED</b>	10-Feb-2023

<b>GENERAL COMMENTS</b>	<p>The study protocol entitled “evaluating the implementation of the Mayo-Portland adaptability inventory-4 (MPAI-4) in three rehabilitation settings in Quebec: A mixed-methods study protocol” focuses on the factors involved in introducing the MPAI-4 to assess rehabilitation outcome in three hospitals. The study attempts to not only identify the factors that are favorable and unfavorable in implementing this measure but also develop strategies to enhance the usage of the MPAI-4. I commend the authors for designing this study as results from such studies have great utility in healthcare organizations to understand the team behavior when introducing new treatment protocols/procedures. That being said, there are some minor concerns to address:</p> <p>Introduction: The authors have provided sufficient background information about the theoretical underpinnings for their methodology within the context of their study. However, on page 5, line 53, “the quadruple aim framework” needs to be elaborated.</p> <p>Methods: The methods section is well organized. The description of the phases of the study is clear and indicates a good plan. The authors have chosen appropriate statistical analyses for both quantitative and qualitative methods.</p> <p>Although the Gantt chart provides an overall timeline, the study dates are not specified. It is understandable that their pre-implementation phase has been impacted by the COVID-19 pandemic. The authors may want to include the dates of the each of the phases in their revised submission.</p> <p>Under the Implementation outcomes (page 15, line 14), the authors indicate not having a cut-off score for the outcome measures (AIM,</p>
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	<p>IAM, and FIM). Their statement “higher scores indicate greater acceptability...” sounds arbitrary. Although a standardized cut off score is not available for these measures, it is important for the authors of the current study to establish a cut off score for the purpose of this present study (based on previous experiences with these measures, other studies published or presented in conferences, or expert opinion, etc.) to reduce any ambiguity in decision making process. Not having a cut off score will reduce the objectivity of the study.</p> <p>Other minor edits:  The entire study protocol needs revision for word choice, punctuation, sentence structure, and inconsistent use of abbreviations, which will improve the reader friendliness. The following are some of the examples:</p> <ul style="list-style-type: none"> <li>• When using abbreviations, make sure to provide the expansion for the abbreviation the first time (e.g., NOMAD, CFIR).</li> <li>• MPAI-4 versus MPAI – need to maintain consistency unless the authors meant two different versions. In that case, the authors need to indicate the different versions on the protocol.</li> <li>• Page 7, line 20: does the word “uptake” meant clinicians’ acceptance, use, or openness to use the MPAI-4? Authors could consider using a different term for uptake in this sentence and elsewhere in the protocol</li> <li>• Page 7, line 50: What do they mean by the term “responsiveness.” They could either elaborate or use a different appropriate term here.</li> <li>• Page 9, line 9: Under approaches does “determine with the support of ....” Mean identify all the members of local implementation committee with the support of the managers? If they meant the later, consider rephrasing it.</li> <li>• Page 9, line 16 and 4: Consider elaborating the word “Choice” in both the statements or use a different term</li> <li>• Page 9, line 37: Use development instead of “develop.”</li> <li>• Page 9, line 10: under Implementation strategies, specify the specialty of the postdoctoral fellow and give facts regarding their experience (e.g., have x number of months or years working with clinical population or multidisciplinary teams) instead of “great experience in knowledge translation)</li> <li>• Page 10, line 11: Under Approaches, consider breaking the “adaptation of each site...” into two separate points. Additionally, consider adding the word “administration or evaluation or assessment” at the to indicate the authors meant electronic and in person administrations of MPAI-4.</li> <li>• Page 10, line 23: Under Implementation process, using the term “Main Study” is more appropriate than “Full Scale.”</li> <li>• Page 15, line 7: Should it read “These are three brief,....” Instead of “There are three briefs...”</li> <li>• Page 15, line 9: the sentence “each measure is composed....” Needs to be rephrased</li> <li>• Page 15, line 43: Did the authors mean “reflective” instead of “reflexive?”</li> </ul>
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#### VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
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Dr. Alison Cogan, VA Greater Los Angeles Healthcare System	
<p>This study reports the protocol for an implementation study of the introduction of the MPAI-4 into three outpatient stroke clinics in Quebec. The study protocol is comprehensive and well aligned with the objectives.</p> <p>The following comments are mostly requests for clarification of certain aspects of the methods</p>	<p>Thank you for this great comment.</p>
<p>It may be easier to describe the assessment tools first and then discuss when they will be administered.</p>	<p>We have modified the data collection section. We have added the three assessment tools as focus groups, patients' charts, and survey on page 13.</p>

<p>Page 6 line 18: missing a word (The use of mixed-methods within...)</p>	<p>Thank you for pointing this out. We have added the word 'of' as per page 6. "The use of mixed methods within the multiple case study..."</p>
<p>Page 6 line 50: awkward wording or possibly just the wrong word: ...with good psychometric properties as the responsiveness.... ("as" seems like the problematic word here)</p>	<p>We have modified the sentence to increase the clarity. "...with good psychometric properties, including responsiveness, defined as the ability of the MPAI-4 to detect a change in a patient in rehabilitation over time." as per page 6.</p>
<p>Page 7: Statement about patient and public involvement is a bit unclear. Does this statement mean that patients/the public were not involved in the study design only? Clearly, patients will be involved in the implementation process (at least indirectly) as they are assessed using the MPAI-4.</p>	<p>We followed the patient and public involvement reporting required by BMJ open Journal <a href="https://bmjopen.bmj.com/pages/authors/#protocol">https://bmjopen.bmj.com/pages/authors/#protocol</a></p> <p>Thank you for this suggestion. We have modified the paragraph as per page 7 "There was no patient involvement in the implementation project and development of the protocol due to the COVID-10 pandemic and its challenges. However, patients will be involved in the study as they will be assessed using the MPAI-4 by the clinicians as part of rehabilitation care. There is no expected research data collection for patients."</p>
<p>Page 7: Could the authors clarify the</p>	<p>Thanks for asking for this clarification. We have modified</p>

<p>process of identifying implementation strategies?</p> <p>Is the first phase to identify barriers and enablers to implementation with clinicians and managers, and then map those barriers and enablers to CFIR and ERIC to identify strategies? Or will suggestions for strategies be solicited from clinical teams first? Are both steps part of pre-implementation? Note: As I read further down, it appears this paragraph was intended to serve as an introduction to the overall description of the pre-implementation and implementation phases of the study (starting with the heading “Implementation process”. Initially, it seemed as though this paragraph was the beginning of the detailed methods because of the information about engaging clinical teams and selecting strategies.</p>	<p>the sentences as per page 7.</p> <p>The implementation strategies will be suggested by the clinical teams from their perceived barriers and enablers during the pre-implementation phase. Additional strategies will be tailored based on the barriers and enablers identified in each site as informed by the Consolidated Framework for Implementation Research (CFIR), as well as by the Expert Recommendations for Implementing Change (ERIC) taxonomy during the implementation phase.</p>
<p>Page 12 line 27: Are IT professionals included because they need to make changes to an electronic health record system to support the implementation?</p>	<p>As the MPAI will be on an electronic platform, we will include the IT services because they have the expertise on the IT tools, laws, privacy issues and limitations in each participant site. We will work closely with them to improve the implementation success: “Focus groups with information technology teams will be used to understand the existing patient care software systems, IT resources, and the IT requirements to improve the implementation success” as per pages 9-10.</p>
<p>Page 12 line 30: Could you clarify whether all rehabilitation professionals will be administering the MPAI-4 once implemented?</p>	<p>We confirm that all rehabilitation professionals can administer the MPAI-4. We have added this to the sentence “For the quantitative component, we will recruit clinicians from all professions in participating sites who can administer the MPAI-4 after its implementation, including occupational therapists, physical therapists, psychologists, social workers, and speech-language pathologists”.</p> <p>9.</p>
<p>Page 12 line 48: “Objective 1” is not labeled as such anywhere else in the</p>	<p>Objective 1 appears is under ‘specific objectives’ on page 5, and on page 9. It refers to “Describe the context in which each stroke rehabilitation site will implement the</p>

paper.	MPAI-4, and the potential strategies to improve implementation success”.
Page 13, survey paragraph: This paragraph is confusing. Will you use the 2 assessments listed, or are you adapting them in some way (described as “questions related to two measurement tools”). Also, the beginning of the paragraph says it is a 15-minute survey and then the last sentence says 20 minutes. Please clarify.	Thank you for highlighting this point. We have modified this paragraph on per page 10 to clarify the description of the survey. “Quantitative data will be collected from a survey sent to all clinicians. The survey will be in English or French and will include the Organizational Readiness for Implementing Change (ORIC) and implementation outcome measures described below. Sociodemographic variables will be collected including gender, age, clinical site, profession, and years practicing. Participants will need approximately 20 minutes to complete the survey.”
Page 13, line 39+: The first sentence about ORIC is quite long. Consider splitting it into two sentences.	Thank you for the suggestion. The sentence has been split into 2 as per page 10. “The ORIC is based on Weiner’s organizational theory and aims to evaluate the organization’s readiness to implement change, including its commitment to change, and its change efficacy as perceived by its members. It will also use to guide the clinicians in identifying the strategies and resources relevant to their context.”
Can you clarify which language version(s) of ORIC you will be using?	We have added a new sentence as per page 11: “We will use both versions in the study to offer clinicians the opportunity to use the tool in their preferred language”
Page 20, first sentence: Can you clarify what data will be collected by “screening of MPAI-4 data from patient charts” and the three online surveys? Are you planning to extract the actual patient MPAI-4 responses or some kind of meta-data about the administration? How is data from the patient chart similar or different from the three online surveys?	<p>We have added as per pages 14, 33-34: “We will report MPAI-4 data from patient charts at different periods of administration (admission and discharge). Several implementation process outcomes will be collected from patients’ charts as the fidelity, the feasibility, the adoption. For instance, we will collect data on the number/percentage of clinicians who have used the MPAI-4 at the admission, the discharge or both; all its subscales; the missing subscales; the number of clients with whom the clinicians used the MPAI-4 (See Table 2). “</p> <p>We have modified and clarified this sentence: “We will use a 15-minute online, auto-administrated, and anonymous survey administered to all clinicians at each of the three time points to collect information on the MPAI-4 integration over time. The survey includes three parts. Part A: sociodemographic information; Part B: Information about the current use and the outcomes of implementation efforts. Part C is composed of 20 items on 5-point Likert scale (1=completely agree to 5=completely disagree) from Normalisation Measure Development questionnaire (<i>NoMAD</i>), and assesses staff perceptions of the factors relevant to embedding the MPAI-4 in their clinical practice.” The survey will be used to capture additional information about the clinicians’ perspectives on the integration of MPAI-4 in their clinical practices as per pages 15, 33-34.</p>

Page 20, line 21: What construct does Part C of the NoMAD assess?	Thank you for pointing this out. We have added as per page 15: "the Part C is composed of 20 items on 5-point Likert scale (1=completely agree to 5=completely disagree) and addresses questions about staff perceptions of the factors relevant to embedding the MPAI-4 in their clinical practice".
Page 22, line 30+: can you say a bit more about how response bias is a limitation? As currently written, it sounds like the mixed-method approach will introduce this bias, but then triangulation of sources is described as part of the remedy.	We have modified the sentence on page 17. "Mixed methods are useful to address complex research problems that require several data sources such as self-reported questionnaires, patient charts, interviews and focus groups. However, self-reported data collection methods and focus groups may introduce response bias, either as an under or an overestimation of the expected behavior and social desirability. To overcome these challenges and potential biases, we will use triangulation across data sources, various theoretical applications, different methods of analysis and clinical teams' involvement to increase the in-depth understanding of our data and mitigate their potential impacts".
<b>Reviewer 2</b>	
Introduction: The authors have provided sufficient background information about the theoretical underpinnings for their methodology within the context of their study. However, on page 5, line 53, "the quadruple aim framework" needs to be elaborated.	<p>Thank you for the suggestion.</p> <p>We have given more detail on the Quadruple aim Framework and its link with to quality improvement as per pages 4-5.</p> <p>"The Quadruple aim describes the importance of healthcare improvement and transformation efforts of the healthcare system to meet several objectives including improving the health of population, the patients' experience of care, the health care providers' experience and reducing the cost of care with the intention of improving health equity."</p>
Methods: The methods section is well organized. The description of the phases of the study is clear and indicates a good plan. The authors have chosen appropriate statistical analyses for both quantitative and qualitative methods.	Thank you for this positive comment!
Although the Gantt chart provides an overall timeline, the study dates are not specified. It is understandable that their	We have modified the Gantt chart and included the years for each phase as per page 35.

pre-implementation phase has been impacted by the COVID-19 pandemic. The authors may want to include the dates of the each of the phases in their revised submission.	
Under the Implementation outcomes (page 15, line 14), the authors indicate not having a cut-off score for the outcome measures (AIM, IAM, and FIM). Their statement “higher scores indicate greater acceptability...” sounds arbitrary. Although a standardized cut off score is not available for these measures, it is important for the authors of the current study to establish a cut off score for the purpose of this present study (based on previous experiences with these measures, other studies published or presented in conferences, or expert opinion, etc.) to reduce any ambiguity in decision making process. Not having a cut off score will reduce the objectivity of the study.	We have added as on page 11 : “Cut-off scores for interpretation not yet available; however, we will consider the mean value as in many other studies using these measures . As a result, the higher scores will indicate greater acceptability, appropriateness, or feasibility.”
The entire study protocol needs revision for word choice, punctuation, sentence structure, and inconsistent use of abbreviations, which will improve the reader friendliness. The following are some of the examples: When using abbreviations, make sure to provide the expansion for the abbreviation the first time (e.g., NOMAD, CFIR). • MPAI-4 versus MPAI – need to maintain consistency unless the authors meant two different versions. In that case, the authors need to indicate the different versions on the protocol.	Thank you very much for the comments. We have asked a native English speaker to review the grammar in the manuscript.
Page 7, line 20: does the word “uptake” mean clinicians’ acceptance, use, or openness to use the MPAI-4? Authors could consider using a different term for uptake in this sentence and elsewhere in the protocol	In this study, uptake refers to use or adoption. We have modified this term and replaced with “Use” throughout the manuscript.
Page 7, line 50: What do they mean by the term “responsiveness.” They could either elaborate or use a different	Thank you for the suggestion. As Reviewer 1 has also suggested changes, we have modified the sentence as per page 6 to reflect that responsiveness represents the



appropriate term here.	degree to which the measure (MPAI-4) changed over time. In response to this change, the clinicians can adapt their practice to improve patients' outcomes over time.
Page 9, line 9: Under approaches does "determine with the support of ...." Mean identify all the members of local implementation committee with the support of the managers? If they meant the later, consider rephrasing it.	We have modified the sentence and added "involvement of the managers and all the members of the implementation committee" as per page 31.
Page 9, line 16 and 4: Consider elaborating the word "Choice" in both the statements or use a different term	We have replaced the word "choice" by identification in both sentences as per page 31.
<ul style="list-style-type: none"> <li>Page 9, line 37: Use development instead of "develop."</li> </ul>	Thank you for the suggestion. We have replaced "develop" by the term "development" as per page 31.
Page 9, line 10: under Implementation strategies, specify the specialty of the postdoctoral fellow and give facts regarding their experience (e.g., have x number of months or years working with clinical population or multidisciplinary teams) instead of "great experience in knowledge translation)	We have added the number of years of experience with the clinical teams as per page 31: "Facilitation strategies with an external facilitator who is a postdoctoral fellow with extensive experience in knowledge translation and working in the clinical environments with various stakeholders including researchers, managers and patients (more than eight years working with the clinical teams)."
Page 10, line 11: Under Approaches, consider breaking the "adaptation of each site..." into two separate points. Additionally, consider adding the word "administration or evaluation or assessment" at the to indicate the authors meant electronic and in person administrations of MPAI-4	<p>We have split the sentence in two.</p> <p>We have modified the second sentence as per page 32 such as:</p> <p>"Adaptation to each site for the duration of the pilot step";</p> <p>"In-person or electronic administration of MPAI-4"</p>
<ul style="list-style-type: none"> <li>Page 10, line 23: Under Implementation process, using the term "Main Study" is more appropriate than "Full Scale."</li> </ul>	We have replaced "full scale "with the term "main study" throughout the manuscript.
Page 15, line 7: Should it read "These are three brief,...." Instead of "There are three briefs..."	Thank you for the suggestion. We have deleted the "s " as per page 11.
Page 15, line 9: the sentence "each	Thank you for the suggestion. The sentence has been

measure is composed....” Needs to be rephrased	modified as per page 11.  “Each measure has four items per construct with ordinal five response options (from “completely disagree” to “completely agree”), for a total of 12 questions”.
Page 15, line 43: Did the authors mean “reflective” instead of “reflexive?”	By the reflexive term, we mean the reflection of the practice of using the MPAl-4 from the perspective of health care improvement as per pages 8 and 11. This word may also mean the recognition and the reflection on the impact of research setting, or of the researchers themselves, on the qualitative methods and/or findings.

#### VERSION 2 – REVIEW

<b>REVIEWER</b>	Cogan, Alison University of Southern California, Chan Division of Occupational Science and Occupational Therapy
<b>REVIEW RETURNED</b>	02-May-2023
<b>GENERAL COMMENTS</b>	The authors have been very responsive to all the reviewer comments and improved upon an already well written manuscript. I have no further changes to suggest.